

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Status of Claims:

No claims are currently being added or cancelled.

Claims 1-6, 10, 11 and 14 are currently being amended.

This amendment and reply amends claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claims remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-6 are pending in this application for examination on the merits, whereby claims 7-14 are withdrawn from consideration. However, please note that, due to the amendments made to “withdrawn” claims 10, 11 and 14, rejoinder of those claims is respectfully requested upon allowance of this application.

Claim Rejections – Prior Art:

In the Office Action, claims 1-4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2003/0148623 to Ohmi et al. in view of U.S. Patent Publication No. 2002/0043341 to Kanetsuki et al. and U.S. Patent Publication No. 2005/0211702 to Gigl et al.; and claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,203,620 to Moslehi in view of U.S. Patent No. 6,499,425 to Sandhu et al. These rejections are traversed with respect to the presently pending claims under rejection, for at least the reasons given below.

As described in paragraph [0023] of the specification, the present invention directed to a plasma processing apparatus which has a space or spaces left between a cover plate and a shower plate and serves to suppress an abnormal discharge in that space or spaces. To this

end, the cover plate is formed by a material having a relative dielectric constant smaller than that of the shower plate.

Turning now to the cited art of record, Ohmi discloses a plasma processing apparatus which comprises a shower plate 14, a cover plate 15, and a depression 14B between the shower plate 14 and the cover plate 15. Both the shower plate 14 and the cover plate 15 are formed by alumina (Al_2O_3). See paragraph 0051 of Ohmi. As correctly recognized in the Office Action, no teaching is made in Ohmi et al. about forming both the shower plate 14 and the cover plate 14 by different materials. Moreover, no suggestion is also made at all in Ohmi et al. about generation of an undesirable discharge in the depression 14B between the shower plate 14 and the cover plate 15.

Kanetsuki et al. discloses a plasma process apparatus which comprises a shower plate 5 or 105 and a chamber lid 1 (Fig. 1) or 101 (Fig. 9). In order to prevent generation of plasma in an unwanted location in reactive gas channel 115 (see paragraph 0015), a metal plate 16 of a conductor is disposed between a shower plate 5 and a chamber lid 1 (see paragraph 0054). From this fact, it is readily understood that Kanetsuki et al. is directed to disposing an additional member different from the chamber lid 1 and the chamber lid 101. In other words, no teaching or motivation is provided in Kanetsuki et al. about forming both the chamber lid 1 and the shower plate 5 by different materials.

Gigl et al. discloses crucibles for a microwave sintering furnace which can reduce the risk of fracture due to thermal stress (see paragraph 0013 of Gigl et al.). For this purpose, a container is comprised predominantly of one or more materials each having an ability to withstand thermal shock that is greater than that of alumina (see claim 1 of Gigl et al.). However, Gigl et al does not teach or suggest making different members by different materials so as to suppress an electric field concentration.

In stark contrast to the cited art of record discussed above, the present invention as exemplified by presently pending independent claims 1 and 5 is directed to suppressing local electric field concentration in a space between the shower plate and the cover plate and to form both the shower plate and the cover plate by materials different in relative dielectric

constant from each other. In particular, the present invention according to presently pending independent claims 1 and 5 recites that the cover plate is formed by a material having a relative dielectric constant that is smaller than that of a material forming the shower plate, whereby this structure helps suppress an abnormal discharge between the cover plate and the shower plate.

Accordingly, presently pending independent claims 1 and 5 are patentable over the combined teachings of Ohmi, Kanetsuki et al. and Gigl et al.

Moslehi, which is cited against claim 5, is directed to a hermetically-sealed inductively coupled plasma source structure, whereby it does not teach or suggest suppressing local electric field concentration in a space between the shower plate and the cover plate and to form both the shower plate and the cover plate by materials different in relative dielectric constant from each other.

Sandhu et al., which is also cited against claim 5, is directed to a plasma processing apparatus that includes a showerhead that allows for selective ionization of process gasses within the showerhead (see Abstract), whereby it does not teach or suggest suppressing local electric field concentration in a space between the shower plate and the cover plate and to form both the shower plate and the cover plate by materials different in relative dielectric constant from each other.

Accordingly, presently pending independent claims 1 and 5 are patentable over the combined teachings of Moslehi and Sandhu et al.

Conclusion:

Since all of the issues raised in the Office Action have been addressed in this Amendment and Reply, Applicant believes that the present application is now in condition for allowance, and an early indication of allowance is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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